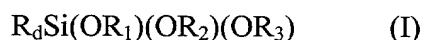


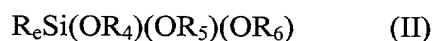
What is claimed is:

1. A process for priming an inorganic substrate comprising the steps of:
 applying to the surface of the substrate a thin film of a primer
 composition comprising a diluent silane compound of formula (I):



wherein R_d comprises an organic non-polymerizable moiety, and R_1 , R_2 , and R_3 are independently selected from the group consisting of H, halogen, C_1 to C_{10} alkyl, C_6 to C_{14} aryl, and a silicate network;

and a free radical-polymerizable silane compound of formula (II):



wherein R_e comprises a free radical-polymerizable moiety,

R_4 , R_5 and R_6 are independently selected from the group consisting of H, halogen, C_1 to C_{10} alkyl, C_6 to C_{14} aryl, and a silicate network;

wherein the mole ratio of diluent silane to free radical polymerizable silane is between 1:9 and 9:1; and

at least partially condensing the diluent silane and the free radical polymerizable silane to form a silicate network, thereby forming a primed substrate having a condensed primer layer covalently bonded to the substrate, the surface of the primer layer having reactive polymerizable moieties.

2. The process of claim 1, wherein the step of at least partially condensing the silanes is performed by heating at a temperature between about 70 C and about 140 C for up to about 2 hours.

3. The process of claim 1, wherein the inorganic substrate is a silicon wafer.

4. The process of claim 3, wherein the silicon wafer further comprises a layer of silicon dioxide, and the thin film of the primer composition is applied to the surface of the silicon dioxide.

5. The process of claim 1, wherein the thickness of the primer layer is between about 30 Å and about 2 μm.

6. The process of claim 1, wherein the thickness of the primer layer is between about 30 Å and about 300 Å.

7. The process of claim 1, wherein the diluent silane is selected from the group consisting of tetraethylorthosilicate and 3-aminopropyltriethoxysilane.

8. The process of claim 1, wherein the free radical polymerizable silane is selected from the group consisting of 3-acryloxypropyltriethoxysilane, 3-acryloxypropyltrimethoxysilane, 3-methacryloxypropyltriethoxysilane and 3-methacryloxypropyltrimethoxysilane.

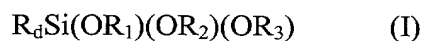
9. The process of claim 8, wherein the silanes of the primer composition have at least partially condensed to form a sol.

10. The process of claim 1 wherein the mole ratio of diluent silane to free radical polymerizable silane is between 1:3 and 3:1.

11. The process of claim 1 wherein the mole ratio of diluent silane to free radical polymerizable silane is between 1:2 and 2:1.

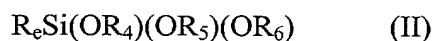
12. A process for forming a polymer layer on an inorganic substrate comprising:

applying to the surface of an inorganic substrate a thin film of a primer composition which comprises a diluent silane compound of formula (I):



wherein R_d comprises an organic non-polymerizable moiety, and R_1 , R_2 , and R_3 are independently selected from the group consisting of H, halogen, C_1 to C_{10} alkyl, C_6 to C_{14} aryl, and a silicate network;

and a free radical-polymerizable silane compound of formula (II)



wherein R_e comprises a free radical-polymerizable moiety,

R_4 , R_5 and R_6 are independently selected from the group consisting of H, halogen, C_1 to C_{10} alkyl, C_6 to C_{14} aryl, and a silicate network;

5 wherein the mole ratio of diluent silane to free radical polymerizable silane is between 1:9 and 9:1;

at least partially condensing the diluent silane and the free radical polymerizable silane to form a silicate network, thereby forming a primed substrate having a condensed primer layer covalently bonded to the substrate, the surface of the primer layer having reactive polymerizable moieties;

10 applying to the surface of the primer layer an energy curable composition; and

polymerizing the energy curable composition, thereby forming a polymer layer, the polymer layer forming covalent bonds to the primer layer.

15 13. The process of claim 12, wherein the step of at least partially condensing the silanes is performed by heating at a temperature between about 70 C and about 140 C for up to about 2 hours.

20 14. The process of claim 12, wherein the energy curable composition comprises a free radical-polymerizable monomer or oligomer and a free radical initiator.

25 15. The process of claim 14, wherein the free radical initiator is a photoinitiator and the energy curable composition is polymerized by exposure to actinic radiation.

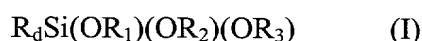
30 16. The process of claim 12, wherein the energy curable composition comprises a fluorinated acrylate compound.

17. A layered structure comprising:

(a) an inorganic substrate and

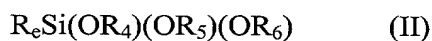
(b) an at least partially condensed primer layer deposited on the substrate,
the primer layer comprising:

5 a diluent silane compound of formula (I):



wherein R_d comprises an organic non-polymerizable moiety, and R_1 , R_2 ,
and R_3 are independently selected from the group consisting of H, halogen, C_1 to C_{10}
alkyl, C_6 to C_{14} aryl, and a silicate network;

10 and a free radical-polymerizable silane compound of formula (II):



wherein R_e comprises a free radical-polymerizable moiety,

R_4 , R_5 and R_6 are independently selected from the group consisting of H,
halogen, C_1 to C_{10} alkyl, C_6 to C_{14} aryl, and a silicate network;

15 wherein the mole ratio of diluent silane to free radical polymerizable silane is
between 1:9 and 9:1.

18. The layered structure of claim 17, wherein the reactive polymerizable
moieties of the primer layer are substantially unreacted after storage at room
20 temperature for 1 day.

19. The process of claim 18, wherein the reactive polymerizable moieties of
the primer layer are substantially unreacted after storage at room temperature for 3
days.

25 20. The layered structure of claim 17, further comprising a cured polymeric
material deposited on the primer layer, the cured polymeric material forming covalent
bonds with the primer layer.

30 21. The layered structure of claim 20 wherein the cured polymeric material
is a fluorinated polymer.